

GO--NREL-NREL-2005-0001

NOTIFICATION

## Occurrence Report

### After 2003 Redesign

National Renewable Energy Laboratory

(Name of Facility)

Solar Activities

(Facility Function)

Golden, Colorado

National Renewable Energy Laboratory

(Laboratory, Site, or Organization)

**Name:** STEWART, MICHAEL E**Title:** Senior Safety Engineer**Telephone No.:** (303) 275-3224

(Facility Manager/Designee)

**Name:** STEWART, MICHAEL E**Title:****Telephone No.:** (303) 275-3224

(Originator/Transmitter)

**Name:****Date:**

(Authorized Classifier (AC))

**1. Occurrence Report Number:** GO--NREL-NREL-2005-0001

Worker sustains eye injury while operating a Class IV YAG laser.

**2. Report Type and Date:** NOTIFICATION

	Date	Time
<b>Notification:</b>	01/21/2005	18:58 (ETZ)
<b>Initial Update:</b>		(ETZ)
<b>Latest Update:</b>		(ETZ)
<b>Final:</b>		(ETZ)

**3. Significance Category:** 2**4. Division or Project:** National Center for Photovoltaics

**5. Secretarial Office:** EE - Energy Efficiency and Renewable Energy

**6. System, Bldg., or Equipment:** Solar Energy Research Facility - Photoconductivity Msmts

**7. UCNI?:** No

**8. Plant Area:** SERF Lab E-218

**9. Date and Time Discovered:** 01/19/2005 12:10 (MTZ)

**10. Date and Time Categorized:** 01/21/2005 14:00 (MTZ)

**11. DOE HQ OC Notification:**

Date	Time	Person Notified	Organization
01/21/2005	14:26 (MTZ)	Thomas Yates	DOE/HQ

**12. Other Notifications:**

Date	Time	Person Notified	Organization
01/19/2005	15:41 (MTZ)	Karen Harness	DOE/GFO
01/19/2005	15:41 (MTZ)	Matt Graham	DOE/GFO
01/21/2005	14:26 (MTZ)	Karen Harness	DOE/GFO
01/21/2005	14:26 (MTZ)	Matt Graham	DOE/GFO

**13. Subject or Title of Occurrence:**

Worker sustains eye injury while operating a Class IV YAG laser.

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**14. Reporting Criteria:**

2A(4) - Personnel exposure to chemical, biological or physical hazards above limits established by the Occupational Safety and Health Administration (refer to 29 CFR Part 1910) or American Conference of Governmental Industrial Hygienists, whichever is lower, and that requires the administration of medical treatment beyond simple first aid on the same day as the exposure. (29 CFR 1904.7(b)(5)(i) and (ii) define "medical treatment" and "first aid.")

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**15. Description of Occurrence:**

At approximately 12:00 p.m. Wednesday 01/19/05, a worker sustained a "laser" injury to his right eye while working in SERF Lab E-218.

The equipment in use at the time of the incident incorporates a Class IV Yttrium Aluminum Garnet (YAG) laser. The light exiting the equipment housing has a wavelength of 750 nm and a power of 200 milliWatts/200 nanoJoules attenuated to 200 nanoWatts/20 nanoJoules. The worker and his supervisor reported to NREL Medical Services where he described his symptoms as seeing "floaters" and a

yellowish-orange spot in his upper field of vision. The worker was transported by his supervisor to Denver Eye Surgeons for medical assessment and treatment. The initial report from Denver Eye Surgeons is that the worker sustained a 2mm retinal burn and is being referred to a retinal specialist for examination and treatment as necessary. Denver Eye Surgeons administered a steroid injection to reduce inflammation and swelling. The follow up examination is scheduled for Monday January 24, 2005.

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**16. Is Subcontractor Involved? No**

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**17. Operating Conditions of Facility at Time of Occurrence:**

Does not apply

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**18. Activity Category:**

03 - Normal Operations (other than Activities specifically listed in this Category)

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**19. Immediate Actions Taken and Results:**

NREL Executive Management and Representative of the DOE Golden Field Office were notified of the event at 15:41 on January 19, 2005. It was unclear at that time if the event was a reportable occurrence.

On January 21, 2005 NREL Executive management appointed an NREL team to investigate the incident, determine the causes, and develop corrective actions to prevent recurrence.

On January 21, 2005 NREL Executive Management suspended operations involving Class IIIb and Class IV lasers pending the results of the investigation.

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**20. ISM:**

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**21. Cause Code(s):**

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**22. Description of Cause:**

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**23. Evaluation (by Facility Manager/Designee):**

Research activities involving the use of Class IIIb and Class IV lasers have been suspended pending the results of an investigation. This action has the potential to impact research deliverables.

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**24. Is Further Evaluation Required?: Yes**

If YES - Before Further Operation? Yes

By whom? Investigation Team

By when? 02/15/2005

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## 25. Corrective Actions

(\* = Date added/revised since final report was approved.)

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## 26. Lessons Learned:

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## 27. Similar Occurrence Report Numbers:

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## 28. User-defined Field #1:

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## 29. User-defined Field #2:

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## 30. HQ Keyword(s):

11I--Other - Visiting Scientist/Researcher/Student  
12H--EH Categories - Injuries Requiring Offsite Medical Treatment  
08H--OSHA Reportable/Industrial Hygiene - Safety Compliance  
08C--OSHA Reportable/Industrial Hygiene - Industrial Hygiene Exposure  
08D--OSHA Reportable/Industrial Hygiene - Injury

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## 31. HQ Summary:

On January 19, 2005, a worker in the Solar Energy Research Facility at the National Renewable Energy Laboratory sustained a laser injury to his right eye while operating a Class IV Yttrium Aluminum Garnet laser in Laboratory E-218. The injured worker was transported to Denver Eye Surgeons where the preliminary diagnosis indicates a 2-millimeter retinal burn of the right eye. The worker has been referred to a retinal specialist for further evaluation/treatment. Laboratory management has appointed an internal Laboratory team to conduct an investigation. Operations involving Class IIIb and Class IV lasers were suspended, pending completion of the investigation.

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## 32. DOE Facility Representative Input:

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## 33. DOE Program Manager Input: